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AUTHOR Pultorak, Ed; And Others
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ABSTRACT

This study was undertaken for the purpose of investigating the use of telecommunications for extension courses in teacher education programs. Specific inquiry was focused on two areas: current use (Part I) and equipment/delivery (Part II). Part I has focus on cost per student, types of extension courses, effect of geographic location, and success rate. Part II has focus on interactiveness, multimedia equipment, need for classroom facilitators, special methods for electing instructors, recommended instructional methods, and common problems. The study population consisted of 11 institutions with reputations of having successful extension programs delivered via telecommunications. Because of increased enrollment potential, institutions of higher education should find results valuable. This paper includes the survey instrument, responses to each question, and an analysis of the findings. (Author)

TELECOMMUNICATIONS IN TEACHER EDUCATION: CLOSING THE GAP BETWEEN UNIVERSITY AND EXTENSION PROGRAMS

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by

Dr. Ed Pultorak,

Assistant Professor of Curriculum & Instruction

College of Education

Southern Illinois University at Carbondale

Dr. Virgil Seaman

Associate Professor of Technology Education

Department of Technology

California State University at Los Angeles

Dr. Jim Smallwood

Assistant Professor of Technology Education

Department of Industrial Education and Technology

Morehead State University

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INTRODUCTION

With the rapid advancement of technology in our society, the roles and responsibilities of teacher educators are constantly changing. This paper will provide a knowledge of how technology now enables institutions to offer extension classes miles away using a very stimulating and effective delivery method (telecommunications).

This topic should be of particular interest to professors of teacher education programs. Most are educators whose continual employment is directly related to student enrollment. As enrollment declines, the need to make courses more convenient for students increases. A practical way of doing this is through off-campus offerings. Telecommunications with interactive multimedia equipment provides a very effective method of instruction which can be viewed by large numbers of students for a fraction of the cost.

The following information consists of questions and results succeeded by an analysis of a recently completed survey (February 1990) pertaining to extension courses delivered via telecommunications. The survey consists of two areas: current use (Part I) and equipment / delivery (Part II). Part I has focus on cost per student, types of extension courses, effect of geographic location, and success rate. Part II has focus on interactiveness, multimedia equipment, need for classroom facilitators, special methods for selecting instructors, recommended instructional methods, and common problems.

SURVEY INSTRUMENT AND RESPONSES

This questionnaire is part of a study examining the use of telecommunications in teacher education programs for extension courses. Part I has a focus on current use while Part II is related to equipment and delivery.

DEFINITION OF TELECOMMUN.CATIONS: Programs delivered by electronic means (broadcast, cable, satellite) that are used to instruct students at distant locations.

********** PART I: CURRENT USE **********

1. PARTICIPATING INSTITUTIONS:

1) Oklahoma State University
2) California State University at Chico
3) Indiana State University
4) National Technological University, Colorado, Boulder
5) Western Illinois University (TI-IN United Star Network)

6) Kentucky Telecommunications Consortium
7) Kentucky State University
8) KET (Kentucky Educational Television)
9) Morehead State University
10) Eastern Kentucky University
11) University of Louisville

2. HOW MANY EXTENSION CLASSES PER YEAR ARE OFFERED IN YOUR TEACHER EDUCATION PROGRAM VIA TELECOMMUNICATIONS?

46%	(5)	1-5
18%	(2)	6-10
9%	(1)	11-15
9%	(1)	16-25
18%	(2)	26 or more, please indicate a) "600 - 50% credit 50% non-credit"

3. HOW MANY STUDENTS PER SEMESTER ENROLL IN TELECOMMUNICATION COURSES?

0%	(0)	5-9
9%	(1)	10-24
9%	(1)	25-49
9%	(1)	50-74
9%	(1)	75-99
18%	(2)	100-149
0%	(0)	150-199
9%	(1)	200-499
18%	(2)	500-999
9%	(1)	1000 or more, please indicate a) "3,000 credit 45,000 non-credit"
9%	(1)	No response

4. APPROXIMATELY HOW MUCH MONEY IS REQUIRED PER STUDENT TO OPERATE EXTENSION CLASSES VIA TELECOMMUNICATIONS?

Only 6 responded to this question.
$10 - $15 (postage & materials)
$15 plus indirect costs.
$44 per credit hour
$75
$234 per student (11 million)
$250 - $290 per semester hour

5. WHICH TYPE OF EXTENSION CLASSES ARE OFFERED VIA TELECOMMUNICATIONS?

64% (7) Undergraduate
91% (10) Graduate

0% (0) Methods
18% (2) Specialty Area
9% (1) Student Teacher Seminars

36% (4) Other a) "Non-credit staff development"
b) "Non-credit continuing education"
c) "High school, direct student instruction"
d) "Teacher inservice, high school"

6. WHICH TELECOMMUNICATION COURSES RECEIVE HIGHER STUDENT EVALUATIONS (success)?

9% (1) Undergraduate
9% (1) Graduate

0% (0) Methods
9% (1) Specialty Area
0% (0) Student Teacher Seminars
36% (4) Other a) "Better results with business education."
b) "We only offer undergraduate classes."
c) "We offer graduate classes only."
d) "No formal evaluation."

36% (4) No Difference

7. DOES GEOGRAPHIC LOCATION EFFECT SUCCESS (student evaluation) OF TELECOMMUNICATION CLASSES?

27% (3) No
36% (4) Yes
27% (3) No formal evaluation

IF YES, WHERE ARE YOUR OFFERINGS MORE SUCCESSFUL?

75% (3) Rural
0% (0) Urban
0% (0) City
25% (1) Other a) "Small city"

********** PART II: EQUIPMENT / DELIVERY **********

8. ARE CLASSES PRESENTED LIVE OR RECORDED?

18% (2) Live
27% (3) Recorded
55% (6) Both

IF RECORDED, ARE STUDENTS ABLE TO ASK QUESTIONS AFTER OR DURING CLASS TIME?

56% (5) After
0% (0) During
22% (2) Neither
22% (2) No response

IF LIVE, ARE INSTRUCTORS AND PUPILS ABLE TO HEAR AND INTERACT WITH EACH OTHER AS IN A TRADITIONAL CLASSROOM SETTING?

25% (2) No
75% (6) Yes

IF LIVE, IS VIDEO ONE-WAY (students see teacher only) OR TWO-WAY (teacher can also see students)?

75% (6) One-way
13% (1) Two-way
13% (1) No response

9. DOES YOUR INSTITUTION PROVIDE CLASSROOM FACILITATORS (staff to monitor student behavior)?

64% (7) No
36% (4) Yes, note: 3 responded "faculty instructors."

IF YES, HOW MANY FACILITATORS PER CLASSROOM?

100% (4) 1
0% (0) 2
0% (0) 3 or more

IF YES, WHAT EDUCATIONAL BACKGROUND ARE FACILITATORS REQUIRED TO HAVE?

0% (0) High School
25% (1) Bachelor
25% (1) Master
25% (1) Ph.D.
0% (0) Other, please indicate
25% (1) No response

10. WHAT INSTRUCTIONAL METHOD(S) DO YOU RECOMMEND FOR EXTENSION PROGRAMS DELIVERED VIA TELECOMMUNICATIONS?

56% (5) Didactic (teaching by telling, lecture)
36% (4) Inquiry (teaching by questioning)
18% (2) Group Discussion
27% (3) Other, please indicate

a) "Same as on campus/based on professor"
b) "Computer simulation, use of various methods considering content presented"
c) "Interaction with KET keypads."

11. WHAT MEDIA EQUIPMENT HAVE YOU USED AND HAD SUCCESS WITH IN THE DELIVERY OF INSTRUCTION VIA TELECOMMUNICATIONS?

18% (2) Overhead projector
18% (2) Film projector
73% (8) Video tape (VCR)
55% (6) Other, please indicate

a) "Overhead camera using a writing tablet as a blackboard."
b) "Direct input from computer simulation."
c) "Digitized slides, computer graphics, overhead camera."
d) "Graphics tablet, computer simulations, overhead camera."
e) "Overhead camera, computer simulations, pre-recorded segments."
f) "Pre-taped programs."

12. WHAT MULTIMEDIA EQUIPMENT IS USED TO DELIVER THE MESSAGE?

56% (5) Satellite antenna/dish
36% (4) VCR
9% (1) Electronic writing table (so student can "come to the board")
27% (3) Printer

18% (2) Cordless telephone
36% (4) Computer terminal
9% (1) Automatic talkback system
64% (7) TV monitor 29% (2) Big screen (25" or larger)
71% (5) Small screen

55% (6) Other, please list: a) "Telephone"
b) "Telephone, fax machine, stand alone p , computer terminal into main frame"
c) "Satellite broadcast"
d) "Key pads for interaction, electronic mail"
e) "PBS TV broadcasts"
f) "Home TV screen"

13. ARE INSTRUCTORS SELECTED LIKE NETWORK ANCHORS IN THAT THEY ARE REQUIRED TO SUBMIT A VIDEO TAPED SCREEN TEST?

82% (9) No

9% (1) Yes a) 3 factors: "Expert in content area"
"Previous teaching experience using this medium"
"View a taped lesson"

9% (1) No response.

IF NO, IS THERE ANY SPECIAL METHOD FOR SELECTING INSTRUCTORS FOR SUCH CLASSES?

56% (5) No
a) "We are fortunate to find people willing to teach live TV."

44% (4) Yes, briefly explain:
a) "Expert in content area"
b) "Expert in content area, past experience using this medium"
c) "Our telecourses are licensed from PBS, etc., on video tape.

14. BRIEFLY LIST COMMON PROBLEMS ENCOUNTERED IN THE DELIVERY OF CLASSES.

Interactiveness:

"Interactivity inhibited by phone not always being available."
"Depending on UPS or the postal system to deliver class materials."
"Interaction and overall communications."
"Communications between students and professors."

Distant Sites:

"Sites not always available in areas needed."
"Maintaining personal contacts."
"Availability of library resources at remote sites."

Technical Problems:

"Technical problems at remote sites."
"Coordination with remote sites: Making sure necessary materials arrive at sites and that equipment works."

Administrative Concerns:

"Lack of funding from state."
"Students that do not show for class."
"Time of day to offer programs."
"Facilitator training"
"Communication about programs to appropriate audience."

ANALYSIS

This study was undertaken for the purpose of investigating the use of telecommunications for extension courses in teacher education programs. Specific inquiry was focused on current use, equipment, and delivery systems. Because of increased enrollment potential, institutions of higher education should find the results valuable.

Part I of the analysis section summarizes survey questions related to current use of telecommunications for extension programs. Part II of the analysis section summarizes survey questions related to equipment and delivery systems. All percentages are rounded.

Current Use (Part I)

Question one requested demographic information of participating institutions. Institutions with reputations of having successful extension programs delivered via telecommunications were asked to participate in this investigation. Of the 17 mailed surveys, 11 were completed and returned for a 65% return rate. See survey instrument and responses for study population.

Question two made inquiry regarding the number of extension classes offered per year. Most institutions (46%) offer a small number of extension programs-- 1 to 5. One institution, however, offers approximately 600 per year (300 credit and 300 non-credit). Thus, this finding provides support for growth potential using telecommunications for extension programs. Further, 18% of the institutions offer 6 to 10 courses, 9% offer 11-15, and 9% offer 16 to 25.

Question three surveyed pupil enrollment in extension courses delivered via telecommunications. The amount of enrollment varied

greatly among participating institutions. For instance, one institution enrolls few students (10 to 24) while another offers this type of program to 48,000 students per year-- 3,000 credit and 45,000 non-credit. The spread in enrollment is further demonstrated by the following results: 9% have enrollment of 25 to 49, 9% have enrollment of 50 to 74, 9% have enrollment of 75 to 99, 18% have enrollment of 100 to 149, and 18% have enrollment of 500 to 999. One institution failed to respond.

Question four examined the approximate cost per student to operate extension classes via telecommunications. Only 56% of the institutions responded to this question. Evidently this is a complicated figure to tabulate. Of the institutions that responded, most referred to costs per student for postage, materials, and indirect costs (e.g. $10-$15, $15, $75, and $234) while others made reference to cost per credit hour ($44, $250-$290).

Question five addressed the types of classes offered using this medium. In terms of degree level, most (91%) institutions offer graduate classes and 64% provide undergraduate classes. Perhaps a logical explanation for this is that graduate students are better independent learners than undergraduate, requiring less interaction with the instructor. And if interaction is a problem, as it is with programs that have one-way communication systems, then telecourses would be more suitable for graduate students. In terms of specific course types, none offer methods classes, 18% offer specialty area classes, 9% offer student teacher seminars, and 36% responded other (e.g. staff development, continuing education, teacher inservice, and direct instruction to high school students).

Question six investigated which type of classes are more successfully taught via telecommunications. To measure success, institutions were asked which courses received better course evaluations from students. 9% responded undergraduate, 9% responded graduate, 9% responded specialty area, and 36% responded other (e.g. "Better results with business education classes," "No formal evaluation," "We only offer graduate classes," "We only offer undergraduate classes"). Perhaps the most interesting finding was that 36% indicated no difference. This provides support that various types of courses can be successfully offered via telecommunications.

Question seven examined if geographic location effects success of telecourses. Similar to question 6, to measure success, institutions were asked if geographic location effected student evaluations of course effectiveness. 36% indicated yes, 27% indicated no, 27% indicated no formal evaluation, and one institution did not respond. Of the institutions that indicated geographic location did effect success, 75% revealed that telecommunication programs were more successful in rural areas and 25% indicated that they are more successful in small cities. Thus, institutions considering the implementation of telecommunication extension programs should consider geographic location.

Equipment & Delivery Systems (Part II)

The first question of this section made inquiry regarding the interactiveness of extension programs offered. That is, the capability of the student and instructor to respond to each other both verbally and visually during a class session. Institution were first asked if classes are presented live or recorded. 55%

indicated that classes are presented both live and recorded depending upon content presented. 18% indicated that all instruction is presented live with no recorded sessions. 27% indicated that classes are not presented live but are taped sessions. Of the institutions that offer recorded presentations, 56% indicated that students are able to ask the instructor questions after each session. The remainder either indicated no provision for interaction after the class session (22%) or failed to respond (22%).

When asked if instructors and students are able to verbally interact with each other during live sessions, 75% indicated yes. Thus, most participating institutions provide a means of verbal communication between student and instructor. However, when asked if video is one-way (students see instructor only) or two-way (instructor can also see students), 75% indicated that they only offer one-way video. Thus, visual interaction is very limited. This should be expected due to the fact that provisions for visual interaction are more costly.

Question nine surveyed if institution provide classroom facilitators-- staff to monitor student behavior at remote sites. 64% do not provide classroom facilitators. Of the 36% that provide facilitators, none provide more then 1 per remote site-- 27% have faculty instructors serve as facilitators. When asked what is the minimum educational background facilitators are required to have, 25% responded bachelors degree, 25% responded masters degree, and 25% responded doctoral degree.

Question ten investigated recommended instructional methods for extension course delivered via telecommunications. 56% recommend

didactic (lecture), 36% recommend inquiry (teaching by questioning), 18% recommend group discussion, and 27% recommend other instructional methods (e.g. computer simulation, interaction with KET keypads). Thus, most recommend lecture as a successful instructional method. This finding, however, indicates that a variety of instructional methods may be employed using this medium depending upon the content to be presented.

Question eleven addressed the types of multimedia equipment institutions have had success with in the delivery of instruction. 18% selected overhead projector, 18% selected film projector, 73% selected video tape, and 55% selected other (e.g. computer simulation, overhead camera, digitized slides).

Question twelve is different from question 11 in that it is concerned with the multimedia equipment used to deliver the message from one location to a distant site. Equipment types most commonly used are satellite dishes (56%), VCR's (36%), computer terminals (36%), and T.V. monitors (64%). Other noteworthy equipment types are electronic writing tables (so students can "come to the board"), cordless telephones, fax machines, and electronic mail.

Question thirteen asked if instructors are selected like network anchors in that they are required to submit a video taped screen test. Surprisingly, 82% indicated no. Further, of that 82%, 56% indicated that there is no special method for selecting instructors for such classes. In fact, one institution made the comment that "We are fortunate to find people willing to teach live TV." 9% answered yes and require 3 factors before considering an individual for this type of instruction: expert in content area, previous teaching experience using this medium, and a previously

taped lesson. The other 9% failed to respond.

The last question was an open-ended question which requested institutions to list common problems encountered in extension programs delivered via telecommunications. Problems listed below are direct quotes. For clarification, the researcher classified the problems into the following four groups: interactiveness, distant sites, technical problems, and administrative concerns.

Interactiveness:
"Interactiveness inhibited by phone not always being available."
"Depending on UPS or the postal system to deliver class materials."
"Interaction and overall communications."
"Communications between students and professors."

Distant Sites:
"Sites not always available in areas needed."
"Maintaining personal contacts."
"Availability of library resources at remote sites."

Technical Problems:
"Coordination with remote sites: Making sure necessary materials arrive at sites and that equipment works."
"Technical problems at remote sites."

Administrative Concerns:
"Lack of funding from state."
"Students that do not show for class."
"Time of day to offer programs."
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